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Impact of Dynamic Certification Requirements on the Nuclear Materials Technology Division's TRU Waste Management Program

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Introduction

The issuance of the Waste Isolation Pilot Plant's (WIPP) Hazardous Waste Facility Permit in August of 2000, specifically the attachment **B** Waste Analysis Plan (WAP), had a profound impact upon transuranic (TRU) waste certification at Los Alamos National Laboratory's (LANL) Plutonium Facility. Program certification was lost until Laboratory internal program documents could be amended to meet the new WAP requirements, waste management personnel could be retrained to incorporate the changes into waste operations and the entire program successfully pass subsequent Carlsbad Field Office (CBFO) audit. This action resulted in the suspension of transuranic waste shipments from LANL to WIPP. In addition the changes unnecessarily increased the complexity of TRU waste program activities in waste handling.

The involvement of multiple parties; New Mexico Environment Department (NMED), Facilities & Waste Operations (FWO) and Environment (E) Division with varying degrees of understanding of NMT waste management procedures resulted in conservative interpretations of program requirements leading to unnecessary duplication of activities, further complicating the certification process. The focus of the certification process at LANL is heavily weighted to legacy waste **from** the Transuranic Waste Inspectible

Storage Project (above-ground storage) and does not acknowledge the unique properties of newly generated waste to optimize the certification process.

NMT waste management personnel are currently working with FWO, E and CBFO personnel to eliminate unnecessary and duplicative requirements while maintaining program integrity and assuring that WAP requirements are met. By streamlining program requirements and controlling certification program changes, the new certification requirements, tailored for newly generated waste **can** be met in an efficient and cost effective manner with minimal disruption to operations.

Program Description

Actinide operations at LANL's TA-55 Plutonium Facility generate a wide variety of radioactive, hazardous and mixed waste forms including TRU and mixed TRU. The NMT-7 Waste Management and Environmental Compliance Group is responsible for providing guidance to operations personnel to assure that these wastes are disposed of in a safe, compliant **and** expedient manner. They make sure that the waste is packaged and documented properly for acceptance by FWO Division for interim storage and final assay, real-time radiography and headspace gas analysis. Staging and payload configuration are completed **by** E Division personnel prior to TRUPACT-II loading and shipment of the waste to WIPP. There are approximately 60 personnel in the Group including an integral quality assurance program and staff.

Waste generators and waste management personnel follow a very prescriptive process in order to assure the integrity of the program and that waste acceptance criteria are met. Comprehensive documentation packages are assembled for all waste containers and they are verified for accuracy and circulated for review and approval prior to the shipment of waste off-site and the archiving of files. Waste items are visually inspected for WAC compliance prior to removal from the glovebox line for nondestructive assay. Physical and chemical properties are determined and a generator disclosure statement is collected along with process knowledge of the waste item. The item is sorted based upon the waste matrix, radioisotope content and contamination level. After all necessary information has been collected and acceptance is verified, the item is placed in the proper container that is then sealed when full. Waste management personnel are careful to comply with radiological safety practices and nuclear material accountability requirements. Waste payloads are packaged, marked, labeled, documented and shipped in accordance with DOT regulations. Those packages that are also determined to contain RCRA regulated wastes are labeled, stored and manifested in accordance with RCRA regulations.

Due to the large quantities of data collected for the past 8 years, much of the information regarding waste constituents has been computerized. This facilitates the transfer of information and also reduces transcription and calculation errors on the various data sheets and shipping papers. The entire system has stringent SQA with changes approved by a configuration control committee and carefully documented and extensively tested before implementation.

Regulatory Changes

Many recent changes in the TRU certification program that are being implemented Laboratory wide by an organization outside of the waste generating and handling Divisions, that is primarily concerned with legacy wastes (not generated in accordance with current certification requirements), have had adverse impacts upon waste operations. This is due, in part, to a lack of understanding of current waste operations and an emphasis on legacy waste operations with entirely different levels of documentation and packaging requirements for waste packages generated over the past 30 years. Many mandates such as two separate visual inspection requirements by two certified inspectors are unnecessary and only serve to increase program costs and complexity while yielding no benefit.

The certification process for personnel conducting visual examination is convoluted and ill defined. The interpretation of “equivalent training” is so nebulous that confirmation could not be obtained within the Laboratory and CBFO was contacted to make the decision. This destroys the ability of waste management to make necessary changes in the program quickly enough to address upsets in the program, such as the seasonal increase in TRU waste generation in preparation for quarterly SNM inventories. The emphasis of the training is entirely on knowledge ~~of~~ the WAC with no consideration for practical experience. It is possible for someone certified to the current criteria to be entirely ignorant of the physical appearance of the various waste matrices and the processes that produce them.

Waste stream documents have been assembled to take advantage of acceptable knowledge characterization allowed by EPA. These documents are the result of extensive investigations into the evolution of processes over a number of decades in some cases. A conservative approach dictated that a process that employed a toxic solvent, for instance, would list that constituent as part of the waste stream even though its use may have been discontinued years before. This approach had the effect of doubling the quantity of TRU waste identified as mixed waste since its inception. With the issuance of WIPP's hazardous waste operating permit, disposal of mixed TRU is allowed and is not any more expensive than TRU. The added complexity is in the packaging operation where the waste must be identified, segregated, packaged, marked and stored in accordance with RCRA regulations and also increases the regulatory risk of findings from environmental audits with state levied fines for violations. It will be a difficult and expensive task to sample and conduct analysis to verify the absence of hazardous constituents at RCRA regulated levels in the waste stream when their use may have been terminated decades before.

Many processes currently in place for tracking waste items in the plutonium facility are equivalent to certification program requirements. For instance; all items, both waste and non-waste must be assayed for nuclear materials content. **An** elaborate accounting system, with checks and balances, exists for accountability purposes. Items are tracked from their accounts as they are transferred to materials management rooms for removal from the glovebox line for nondestructive assay. This process and its records on the Material Accountability and Safeguards System (MASS) meet waste certification control

requirements and do not require the implementation of an additional tracking system with its barcodes, reading devices and databases.

Conclusion

The challenge is to simplify programs in order to guarantee a high probability of success instead of increasing complexity for complexity's sake. A large and complicated program does not necessarily guarantee that even most requirements will be met, and certainly not in an expedient and cost effective manner. Not only do we have the responsibility to meet regulations and requirements for safe and responsible waste handling and disposal, we have the responsibility to the taxpayer to assure that we are doing so in a fiscally responsible and effective manner. These goals are not mutually exclusive; they just take coordination, careful planning and thoughtful execution.

To achieve this goal, a multi-organizational working group has been formed to address the aforementioned issues and to improve communications among the various stakeholders and their differing perspectives. In this manner communications can be improved to facilitate understanding of each organization's unique views. And by using this working group the various organizations can work together, synergistically, to improve the newly-generated TRU waste management program at LANL and support the CBFO vision of complex wide process improvement.